



Unlocking the promise of clean energy through nuclear waste recycling

Nuclear energy could provide abundant carbon-free electricity—but it creates over 86,000 tons of underutilized used fuel currently managed as waste.

- This waste grows by 2,000 tons yearly—yet it holds at least 90% unused energy
- Current technology and policies leave this potential untapped
- Unsolved waste fuels public doubts, hindering nuclear's clean energy potential

Complete Nuclear Waste Recycling Solution

- Aim to recycle 100 metric tons per year of used nuclear fuel, transforming it into valuable resources
- Extract 99% of usable Uranium and Plutonium through partnership with global nuclear fuel cycle leader, Orano
- Minimize waste to decrease storage and disposal needs
- Transmutation would further reduce waste volume by 80%

Phased Approach to Unlock Value

SHINE aims to unlock value from used fuel

- Reclaim 90% of unused energy to enable wider clean nuclear energy adoption
- Sell reclaimed isotopes and precious metals
- Avoid waste storage costs
- Target used fuel separations beginning in the early 2030s.

Chrysalis Facility Builds Recycling Foundation

Our licensed molybdenum-99 production plant, Chrysalis, establishes real-world skills vital for used fuel management:

- **Safe Radioactive Handling at Scale:** Demonstrated experience with commercial quantities of radioactive materials
- **Multidisciplinary Competencies:** From dissolution to separation chemistry to regulatory processes - de-risking next phase
- **Proven Operational Excellence:** Chrysalis will soon be the world's largest isotope production operation

Accelerating Impact Through Orano Partnership

The SHINE + Orano partnership removes key barriers to clean nuclear energy growth through next-generation recycling technology. Orano specializes in nuclear materials and technologies spanning the complete nuclear fuel cycle. Together, we're developing recycling commercialization and funding strategies for swift implementation.

Responsible Innovation through Phased De-risking

- Recycle based on licensed technologies with proven safety records
- Improve safety from foundation through innovation
- Adopt Orano’s decades of risk-awareness experience

Sustainably harness nuclear’s promise.

Learn more at shinefusion.com.

